

*Hab.* Tahquitz Valley, San Jacinto Mts., California, 8000 ft., July 21 (*F. Grinnell, Jr.*).

A female taken at the same time and place proves to be only *P. polifolii*.

*Prosopis pasadenæ*, sp. n.

♂.—A very small species, in every way related to *P. mesillæ*, Ckll., but distinguished by the upward extensions of the lateral face-marks, which, instead of being short and broad, are long and slender, curving away from the orbits. The tubercles are variable, dark or spotted. Unlike the *P. digitata* group, the outer margin of the lateral face-marks is even, without any notch or angle at the beginning of the upward process. The first abdominal segment is very shiny, the second dullish.

♀.—Like that of *P. cressoni*, Ckll., but the wings greyish ; or when the clypeus is not entirely dark, like that of *P. mesillæ* in its darker forms, but lateral face-marks pointed above, away from orbit, and upper margin of prothorax all black.

*Hab.* Pasadena, California, April 8 to May 31 (*F. Grinnell, Jr.*) ; near Pasadena, at 1100 ft., July 21 (*F. Grinnell, Jr.*).

V.—*New Species of Diptera in the Collection of the British Museum.* By GEOFFREY MEADE-WALDO, B.A.

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PART I.

DURING a recent rearrangement of this family in the National Collection I have found a number of species which are apparently undescribed ; of these species I have now written descriptions, which I hope to publish in two or three consecutive papers.

In the present paper there are descriptions of new species of the families Masaridæ and Eumenidæ (as far as the genus *Rhynchium*).

All measurements of length are taken from the front of the head to the apical margin of the second abdominal segment, except where the *total* length is expressly mentioned.

The types are all in the National Collection.

DIPLOPTERA, Latr.

Masaridæ, Leach.

*Key to the Genus Paragia, Shuckard.*

- A. Median segment produced into spines at posterior angles.
- a. First recurrent nervure interstitial with first transverse cubital nervure . . . . . *P. maculata*, sp. n.
  - b. Both recurrent nervures received by second cubital cell.
    - a<sup>2</sup>. Wings without a fuscous band along the costa.
      - a<sup>3</sup>. Wings flavo-hyaline, broadly fuscous at apex . . . . . *P. walkeri*, sp. n.
      - b<sup>3</sup>. Wings pale flavo-hyaline, radial cell fuscous . . . . . *P. morosa*, Sm.
    - b<sup>2</sup>. Wings stained with fuscous along the costa.
      - a<sup>3</sup>. Second abdominal segment mostly orange.
        - a<sup>4</sup>. Second abdominal segment with small black mark at base . . . . . *P. calida*, Sm.
        - b<sup>4</sup>. Second abdominal segment with narrow black fascia at base . . . . . *P. excellens*, Sm.
      - b<sup>3</sup>. Second abdominal segment almost or quite black.
        - a<sup>4</sup>. Median segment wholly orange . . . . . *P. sobrina*, Sm.
        - b<sup>4</sup>. Median segment nearly or entirely black.
          - a<sup>5</sup>. Median segment entirely black.
            - a<sup>6</sup>. Basal half of third abdominal segment black . . . . . *P. odyneroides*, Sm.
            - b<sup>6</sup>. Third abdominal segment almost entirely orange.
              - a<sup>7</sup>. Scutellum entirely black . . . . . *P. bidens*, Sauss.
              - b<sup>7</sup>. Scutellum marked with orange. *P. prædator*, Sauss.
        - b<sup>5</sup>. Spines of median segment orange.
          - a<sup>6</sup>. Segments 4-6 of abdomen almost entirely black . . . . . *P. nasuta*, Sm.
          - b<sup>6</sup>. Segments 4-5 of abdomen with orange fasciæ . . . . . *P. venusta*, Sm.
- B. Median segment rounded or not produced into spines at posterior angles.
- a. Angles of the median segment subtuberculate, colours black and reddish orange.
    - a<sup>2</sup>. Scutellum totally reddish orange.
      - a<sup>3</sup>. First abdominal segment reddish orange. *P. concinna*, Sm.
      - b<sup>3</sup>. First abdominal segment black; a small reddish-orange spot on each side. . . . . *P. deceptor*, Sm.
    - b<sup>2</sup>. Scutellum reddish orange on posterior margin only . . . . . *P. pictifrons*, Sm.
  - b. Angles of median segment rounded.
    - a<sup>2</sup>. First abdominal segment as broad as second; colours black and yellow.
    - a<sup>3</sup>. Abdomen wholly yellow . . . . . *P. decipiens*, Shuck.

- b*<sup>3</sup>. Abdomen black and yellow.  
*a*<sup>4</sup>. Scutellum yellow, segments 1-4 of abdomen broadly yellow on sides. . . . . *P. tricolor*, Sm.  
*b*<sup>4</sup>. Scutellum black, segments 2-5 of abdomen with narrow yellow fasciæ on apical margin . . . . . *P. saussurei*, Sm.  
*b*<sup>2</sup>. First abdominal segment narrower than second.  
*a*<sup>3</sup>. Abdomen banded with orange-yellow, second segment black . . . . . *P. magdalena*, Turn.  
*b*<sup>3</sup>. Five basal abdominal segments with narrowly interrupted yellow lines . . . . . *P. vespiformis*, Sm.

*P. australis*, Sauss., and *P. bicolor*, Sauss., are not included in the above key, as I have not seen specimens of them, and the descriptions are too short to render their inclusion possible.

#### PARAGIA, Shuckard.

##### *Paragia maculata*, sp. n.

♀. Black; a spot on the clypeus, in the sinus of each eye, behind the eyes, the anterior margin and posterior angles of the pronotum, the tegulæ, except at the base, a large spot on the mesopleuræ below the base of each fore wing, a spot on the anterior angles of the scutellum, a vertical mark on each side of the median segment, a band on the apex of the first abdominal segment, broadening at the sides, a median series of transverse spots, lateral transverse lines on each side of segments 2-5, a spot on ventral surface of second abdominal segment, orange-yellow. Mandibles, the legs, a spot on the tegulæ at the base, ferruginous. Tibiæ and tarsi of legs densely covered with a greyish-white pubescence on the outside. Wings hyaline; costa, radial, first cubital cell, and nervures fuscous; second cubital cell not receiving both recurrent nervures, but first recurrent nervure interstitial with first transverse cubital nervure. Clypeus subtriangular, depressed and truncate at the apex, with a median longitudinal carina; pronotum broadly rounded in front; scutellum prominent, covering postscutellum, median segment truncate, apical angles produced to a sharp point. Abdomen elongate-ovate, first segment distinctly narrower than second, strongly constricted at apex.

Punctured, thorax and vertex of head rugosely, clypeus and abdomen minutely, truncation of median segment transversely rugulose, with a median carina.

Total length 12 mm.

♂. Similar, orange-yellow spot on clypeus larger than in female, markings in general more yellow.

Total length  $10\frac{1}{2}$  mm.

*Hab.* Western Australia; 1 ♀, 3 ♂.

*Paragia walkeri*, sp. n.

♂. Reddish orange; mandibles at apex, a small area on front round the base of each antenna, mesonotum and tegulæ, pleuræ (except a quadrate spot on mesopleuræ on each side), apical  $\frac{2}{3}$  of second and whole of third abdominal segments, black.

Wings flavo-hyaline, fuscous at apex, especially in the radial cell. Clypeus wider than long, narrowly truncate at the apex; pronotum slightly arched on the anterior margin; scutellum prominent, strongly convex, and overhanging the postscutellum, median segment truncate, a massive tubercle on each side. Abdomen: first abdominal segment broadly cup-shaped, rather narrower than the second, following segments elongate-ovate. Head and thorax evenly studded with small granular puncturations, two furrows on mesonotum converging posteriorly, the abdomen most minutely punctured. Fulvous pubescence on vertex of head, thorax, legs, and abdomen (except segments 2 and 3).

Total length 20 mm.

*Hab.* Adelaide River, Northern Territory, Australia; 1 ♂, collected by Commander J. J. Walker during cruise of H.M.S. 'Penguin.'

This splendid species most strikingly resembles the insects of the Eumenid genus *Abispa*, Mitchell. None of the other described species of *Paragia* have similar wing-coloration, the flavo-hyaline ground-colour and fuscous apical area of *P. walkeri* rendering the likeness between the two genera extraordinary.

JUGURTIA, Sauss.

*Jugurtia escalerae*, sp. n.

♀. Black; the apical half of clypeus, the sinus of each eye, a broad band between the eyes, a line behind them, basal portion of mandibles, scape of antennæ, the flagellum below, the pronotum in front, broadening on the sides, a line on each side of the posterior margin reaching to the tegulæ, a spot in the centre of the mesonotum, the tegulæ, the apex of the scutellum, the postscutellum, two large marks (one oval, the other linear and curved) on mesopleuræ on each side,

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the entire median segment, with the exception of two black pipe-shaped marks placed back to back, a band on the apex of segments 1-5 broadening laterally, apical half of segment 6 totally, ventral surface of segments 1-5 (with exception of a small black spot on each side of segments 2-5), an oval mark on segment 6, the legs entirely, sulphur-yellow.

Apex of mandibles, flagellum of antennæ above, a spot on the tegulæ ferruginous. Vertex, pronotum in front, covered with a short dense pile.

Wings clear hyaline, a slight shade of fuscous in radial cell, the nervures fuscous. The clypeus deeply emarginate at the apex, broadly subtriangular; pronotum rounded in front; scutellum very prominent, rounded, covering the postscutellum; median segment truncate, rounded.

Abdomen elongate-ovate, slender. Punctured; the clypeus, vertex, and thorax coarsely, scutellum very coarsely, median segment very finely rugulose, the abdomen more finely punctured.

Total length 8 mm.

*Hab.* S.W. Persia (*Escalera*); 4 ♀.

This species seems very nearly allied to *J. chlorotica*, Mor., from Transcaspia, but differs in several respects. The ventral surface of *J. chlorotica* is black, whereas the general colouring of the ventral surface of *J. escalera* is sulphur-yellow, and there are other conspicuous differences in coloration. The disparity in size is also worthy of note, *J. escalera* being a considerably larger species.

### Eumenidæ, Westwood.

#### RHAPHIDOGLOSSA, S. S. Saunders.

##### *Rhaphidoglossa punctata*, sp. n.

♂. Black; the clypeus, a transverse spot between the eyes, the lower angle of the sinus of eyes, scape of antennæ beneath, a line on anterior margin of pronotum broken in the middle, two small spots on postscutellum, two spots rather larger on each side of apex of median segment, a small triangular mark on each side of first abdominal segment, second abdominal segment distinctly, segments 3-6 more obscurely marked with transverse lines on apical margin, tibiæ on outside, creamy yellow. Apical margin of second abdominal segment on ventral surface creamy yellow. Mandibles at the apex, segments 2, 3, 4 of the antennæ, a spot behind each eye, tegulæ, a minute spot on mesopleuræ on each side, an arched carina on the extreme apex of first

abdominal segment, base of second segment, the legs (except the coxæ), ferrugineous.

Wings hyaline, somewhat diffused with fuscous on the apical area. Clypeus as broad as long, with a small semi-circular emargination at the apex; pronotum sharply angular in front; mesonotum posteriorly with a longitudinal carina, obscure and shining; scutellum prominent, postscutellum with a minute spine on each side, median segment with a distinct longitudinal furrow.

Abdomen: the first segment as long as thorax, slender, broadening gradually to apex, second segment cup-shaped.

Punctured; the clypeus and whole thorax very coarsely and rugosely, first abdominal segment less coarsely, remaining segments minutely.

Length 10 mm.

*Hab.* Angola (*J. J. Monteiro*); 1 ♂.

Has a strong resemblance to *R. natalensis*, Sm., from Natal, but differs in having no tubercles on the petiole, and in the coarser puncturation of the petiole. It may possibly prove to be the male of *R. natalensis*, although the distance separating the two species geographically is very great.

*Calligaster turneri*, sp. n.

♀. Black; two small round spots on pronotum on each side ferrugineous; tibiæ and tarsi of intermediate and posterior legs covered with a dense short fulvous pile, the vertex and clypeus with a sparse grey pubescence. Clypeus as broad as long, subtriangular; pronotum narrow anteriorly, widening to the tegulæ; scutellum flat, median segment rounded posteriorly, with a conspicuous longitudinal depression between the two sides, punctured; clypeus, mesopleuræ, and mesonotum longitudinally striate, a short longitudinal carina between the antennæ, vertex rugosely, scutellum and postscutellum coarsely punctured, two longitudinal furrows on mesonotum; an obscure furrow on scutellum and postscutellum; abdomen shining, petiole more finely, following segments minutely punctured, an arched keel on apical end of petiole, a distinct transverse furrow anterior to it.

Wings pale fuscous, with a metallic-bronze gloss.

Length 15 mm.

*Hab.* Shillong, Assam (*R. E. Turner*).

Easily distinguished from the nearly allied species by the shape of the petiole, which is much shorter and more ovate than in any other species with the exception of *Calligaster 3-maculatus*, Cam., from Darjeeling; in both of these species

the petiole is not much more than twice as long as broad. It differs from *C. 3-maculatus* in the absence of any ferrugineous band on the apex of the petiole, and in the less coarse puncturation from *C. himalayensis*, Cam., which is an altogether larger insect, with a long depressed petiole; from *C. interstitialis*, Cam., in the absence of any yellow markings; and from *C. etchellsii*, Cam., in the absence of a tooth on the apex of the first abdominal segment and in the shape of the petiole.

#### LABUS, SAUSS.

##### *Labus annulatus*, sp. n.

♀. Black; a small transverse mark at the base of the clypeus, a spot on each angle of the anterior margin of the pronotum, a minute spot on the tegulæ, a band on the apex of the petiole and of the second abdominal segment, the anterior femora beneath, pale yellow. Tegulæ, anterior tibiæ, ferrugineous. Head and thorax, segments 2-6 of abdomen, more or less covered with a short brown pubescence. Wings fusco-hyaline, the costa ferrugineous. Clypeus as broad as long, depressed and broadly rounded at the apex, with two obscure teeth; vertex with a longitudinal depression; pronotum broad in front, the anterior angles forming sharp points; mesonotum flattened posteriorly, a short longitudinal carina running along the surface, median segment convex, with apical angles produced to a point on each side, divided by a longitudinal furrow. Petiole of abdomen as long as thorax, slender, gradually broadening towards the apex, second abdominal segment cup-shaped.

Punctured; head and thorax (with exception of median segment) coarsely, median segment and abdomen shining and sparsely punctured.

Length 7 mm.

♂. Differs from female in having the clypeus and scape of antennæ on underside yellow.

*Hab.* Durban (*F. Muir*); 2 ♀, 4 ♂.

Nearly allied to *Labus* (?) *macrostylus*, Kohl, from Sierra Leone; both species have petioles of the same form. They may be distinguished by the clypeus, which is convex and slightly emarginate at the apex in *L. ? macrostylus*, neither of which characters occurs in *L. annulatus*.

##### *Labus superbus*, sp. n.

♂. Black; clypeus, the scape in front, a small line behind the eyes, the anterior margin of the pronotum broadening on

each side, the tegulæ, two spots on the scutellum, the post-scutellum, a longitudinal mark on each side of the median segment, a spot on each side of petiole, a band on the apical margin of petiole broken in centre, a large elongate-ovate spot on each side of second abdominal segment, the apical margin of second abdominal segment, a band on the apical margin of segments 3, 4, 5, continued on the ventral surface, the legs, except the coxæ and trochanters and in posterior legs the femora, bright orange-yellow. Apex of mandibles, terminal segment of flagellum, the costa of wings, ferrugineous.

Clypeus shallowly and widely triangularly emarginate; pronotum rounded, narrower in front than behind, median segment depressed and arched. Petiole as long as thorax, much attenuated at apex, second segment elongate-ovate.

Punctured; head (except clypeus), thorax, and abdomen coarsely. The whole head and thorax and the first abdominal segment with a greyish-white pubescence.

Length 8 mm.

*Hab.* White Nile; 2 ♂.

*Labus punctatus*, sp. n.

♂. Black; the scape of antennæ beneath, a line on pronotum in front broken in the middle, apex of petiole above and second segment dorsally and ventrally yellow; mandibles at the apex, tegulæ, apex of femora, the tibiæ and tarsi of anterior legs, intermediate tibiæ and tarsi, base of posterior tibiæ, ferrugineous.

Wings hyaline; costa, radial cell, and stigma ferrugineous; the whole insect more or less covered with a pale pile.

Clypeus subtriangular and convex; pronotum square, angular on the anterior margin; mesonotum and scutellum gradually rounded, postscutellum sharply raised to form two teeth, median segment rounded posteriorly. Petiole of abdomen rather shorter than thorax, widening somewhat abruptly towards the apex; second abdominal segment cup-shaped.

Punctured; head, thorax, and petiole coarsely, remaining segments of abdomen more finely.

Length 7 mm.

*Hab.* Kangra Valley, 4500 feet (*G. C. Dudgeon*); 1 ♂.

Closely resembles *L. armatus*, Cam., from Khasia Hills, but may be distinguished by several differences in the colour-pattern, viz. absence of yellow on scutellum, clypeus, and tegulæ. *L. punctatus* is considerably more coarsely punc-



tured, particularly on the petiole. Differs from *L. humbertianus*, Sauss., by the coarser puncturation.

#### DISCOELIUS, Latr.

##### *Discoelius carinatus*, sp. n.

♀. Black; a small spot between the antennæ, a band on the apical margin of the petiole dorsally, a broad band on apical  $\frac{2}{3}$  of second abdominal segment, the following segments dorsally, anterior tibiæ, ferruginous red. Head, thorax (especially the median segment) with sparse short grey pubescence. Wings fusco-ferruginous. Clypeus convex, ovate; mandibles broad; vertex broader than pronotum, which is produced to a sharp point at each angle of the anterior margin; median segment truncate, slightly concave. Abdomen: the petiole short, the swollen apical portion as broad as long, slightly constricted at the apex, the remaining segments elongate-ovate.

Punctured; mandibles and clypeus very coarsely, the head and thorax deeply, sides of median segment striate. Mesonotum with four longitudinal furrows, the two central furrows longer than the others; scutellum traversed by a longitudinal furrow; abdomen more finely punctured.

Length 12 mm.

*Hab.* Victoria (*C. French*); 1 ♀.

Strongly resembles *D. verreauxi*, Sauss., in coloration, but is easily distinguished by much slenderer form of the thorax and the conspicuous row of carinæ on the mesonotum, besides which there are differences in the colour-pattern. The length of the thorax serves to distinguish this species from all the described species of this genus from Australia.

#### ELIMUS, Sauss.

*Elimus*, Sauss., Et. fam. Vesp. vol. i., Eumen. p. 7.

*Ischnocoelia*, Perkins, Proc. Haiw. Ent. Soc. 1908, p. 32.

Saussure makes no mention of the fact that *Elimus* has two calcaria on the intermediate tibiæ and the tarsal claws bidentate. Both of these characters are applicable to *Ischnocoelia*, which appears identical in other respects to *Elimus*, and thus sinks as a synonym to the older genus.

##### *Elimus ferrugineus*, sp. n.

♂. Black; the clypeus, antennæ (with exception of the scape beneath), mandibles, a spot in the sirus of each eye, the pronotum (except the posterior angles), the tegulæ, a

small oval spot on mesopleuræ on each side, a transverse line on the scutellum, the petiole, and segments 2, 4, 5, 6, 7 of the abdomen, the legs (with exception of coxæ and trochanters), ferrugineous. Wings clear hyaline, costa and nervures ferrugineous. Scape beneath yellow.

Clypeus slightly broader than long; prothorax narrow in front, considerably more narrow than vertex of head, widening considerably at the posterior angles; median segment slightly concave medially, rounded posteriorly. Petiole of abdomen of almost even thickness throughout, slightly constricted at base and apex; second segment of abdomen cup-shaped.

Head and thorax throughout evenly and deeply punctured, the abdomen more finely punctured, the mesonotum longitudinally traversed by two shallow furrows.

Length 10 mm.

*Hab.* S. Australia; 2 ♂.

*Elimus mackayensis*, sp. n.

♀. Black; two longitudinal marks on the sides of the clypeus, a minute spot above the insertion of each antenna, a small spot in the sinus of the eyes, a spot behind each eye, the pronotum in front, posterior margin of the tegulæ, the transverse keel of the postscutellum, two minute spots on the apex of the petiole, narrow border to apical margin of each of the following abdominal segments, yellow. Mandibles, the scape, second and third joints of the antennæ, apex of femora, tibiæ and tarsi, tegulæ in front, petiole of abdomen at base and apex, ferrugineous. Wings clear hyaline, slightly fuscous on the costa; the stigma and nervures testaceous; second cubital cell subtriangular.

The clypeus truncate, as broad as long, median segment strongly depressed, the apical angles produced into spines; petiole as long as the thorax, constricted at the ends.

Punctured; head and thorax deeply and evenly. Mesonotum traversed longitudinally by two shallow sulci; abdomen shining, minutely punctured.

Length 11 mm.

*Hab.* Mackay, N. Queensland (*R. E. Turner*).

♂. Strongly resembles the female, but differs in the following respects:—Mandibles and clypeus yellow; terminal joint of antennæ bent back in a hook; clypeus with a shallow emargination at the apex; second abdominal segment much narrower than in female.

Nearly allied to *E. australis*, Sauss., which it strongly

resembles in colour, but may be distinguished by the more slender petiole and differences in the distribution of the markings.

*Elimus robustus*, sp. n.

♀. Black; the mandibles at the base, two oval spots at the base of the clypeus, scape, a spot in the sinus of each eye, a spot on each side behind the eyes, the pronotum, a spot on the mesopleuræ on each side, tegulæ, two spots on the posterior margin of scutellum, two obscure marks on median segment behind, petiole of abdomen along the sides and at apex, second abdominal segment at base and a broad band on the apical margin, the legs (with exception of coxæ and trochanters), ferruginous. Wings pale hyaline, slightly ferruginous along the costa.

Clypeus subtriangular, rather broader than long, median segment strongly depressed, a distinct carina along each side, petiole as long as thorax, following segments elongate-ovate.

Punctured; the head and thorax (except median segment) coarsely, median segment and abdomen minutely; two carinæ converging posteriorly on mesonotum. More or less covered with a pale pubescence, most noticeable on clypeus, vertex, median segment, and the tibiæ.

Length  $12\frac{1}{2}$  mm.

*Hab.* S. Australia; 2 ♀.

*Elimus arabicus*, sp. n.

♀. Black; antennæ, mandibles, clypeus at apex, pronotum, tegulæ, the petiole along the sides and beneath, second abdominal segment at base, legs (with exception of tibiæ above), ferruginous brown. Tibiæ above, narrow band interrupted above in centre on apical margin of petiole, abdominal segments 2-5, pale yellow.

Wings clear hyaline, slightly fuscous along the costal margin, second abscissa of the radius about  $\frac{1}{4}$  as long as the third. Clypeus broader than long; thorax massive; petiole as long as thorax, tapering gradually towards apex; second abdominal segment petiolate at base.

Punctured; head and thorax coarsely, abdomen more finely, apex of median segment on each side produced to form a sharp up-curved process. Dense grey pubescence on head, thorax (except mesonotum), and abdomen, giving the insect a dusty appearance.

Length 14 mm.

*Hab.* Tajura, Straits of Bab-el-Mandeb; 1 ♀.

All the other described species of this genus are from Australia.

This insect is rendered very conspicuous by the denseness of the pubescence, which gives it the appearance of being covered with a bloom, as on grapes, when looked at from a little distance.

#### EUMENES, Fabr.

##### *Eumenes assamensis*, sp. n.

♀. Black; a spot between antennæ, pronotum in front, apex of tegulæ, postscutellum, petiole at the apex, a narrow band on apical margin of second abdominal segment, a small spot on each side of it, a few marks on legs, dull brick-red.

Wings fusco-hyaline, costa and radial cell dark fuscous.

Clypeus broadened from the base, greatest width about half as long as length, produced and narrowed towards apex, convex, a slight emargination at apex. Pronotum narrow and rounded anteriorly, median segment rounded posteriorly; petiole of abdomen as long as thorax, of uniform width, very slender at the base, depressed along the dorsal surface; second abdominal segment arched when viewed laterally. The whole insect coarsely punctured, with the exception of abdominal segments 3-6.

Clypeus covered with a dense silvery pile; vertex of head, the thorax, and abdomen more sparsely covered.

Length 12 mm.

*Hab.* Shillong, Assam (*R. E. Turner*); 2 ♀, 4 ♂.

♂. Rather smaller, the last joint of antennæ bent back on penultimate joint.

Length 10 mm.

Very nearly allied to *E. punctata*, Sauss., described from China, a species occurring also in Sikkim and Burma, in which the markings are yellow. Mr. Turner, who collected for some months in the neighbourhood of Shillong, tells me that the brick-red markings are a characteristic feature of the insect fauna in that region. In addition to the species here described, he captured specimens of an *Odynerus* and of the fossorial genera *Cerceris* and *Crabro*, of *Celiomyia* among the Apidæ, also specimens of a saw-fly. Had not living individuals been observed, it might have been surmised that a damp cyanide bottle had caused a discoloration.

##### *Eumenes nicobarica*, sp. n.

♂. Black; clypeus, sinus of the eyes, pronotum in front, disk of mesonotum with two short lines running longitu-

dinally, and two transverse curved lines above them, mesopleuræ, outer margin of tegulæ, two spots on scutellum, postscutellum, median segment (except for a black mark in shape of a Maltese cross), petiole with a pair of short yellow lines on each side at base and a pair about centre, a transverse band at apex, yellow. Whole of second abdominal segment (with exception of base, a minute black spot on dorsal area, and narrow transverse band on posterior margin) yellow. Segments 3, 4, 5 black, with subapical margins yellow, interrupted narrowly above and broadly below; segment 6 with a yellow spot on each side above. Anterior tibiæ yellow above.

Length 24 mm.

*Hab.* Nicobar Islands; 3 ♂.

Probably a geographical race of *Eumenes arcuata*, Fabr., as there does not appear to be any structural difference between the two species. The insect would come next to *E. arcuata* in Bingham's key ('Fauna Brit. India,' Hymenoptera, vol. i. p. 335). The second abdominal segment is most conspicuously marked with yellow, and renders identification possible at a glance.

#### *Eumenes ovalauensis*, Sauss.

*Belonogaster bidentata*, Kirby, Ann. & Mag. Nat. Hist. (5) xiii. p. 410 (1884) (Fiji).

Described as a female, is a male of *Eumenes ovalauensis*, Sauss. The genus *Belonogaster* appears to be confined to Africa, Madagascar, and Japan.

#### *Eumenes waltoni*, sp. n.

♀. Black; a narrow line behind the eyes, pronotum in front, postscutellum, apical margin of petiole above, conspicuous elongate oval mark on each side of second abdominal segment, a broad band on apical margin of second abdominal segment regular above, uneven on the ventral surface, tibiæ and tarsi yellow. Apex of mandibles and flagellum of antennæ ferruginous beneath.

Clypeus subtriangular, truncate, somewhat depressed at the apex, broadest part of thorax considerably broader than vertex, median segment rounded posteriorly, slightly depressed. Petiole of abdomen short and fairly stout, second abdominal segment about as broad as thorax at the tegulæ.

Punctured: vertex of the head, thorax, median segment,

and petiole coarsely and evenly; clypeus, second and following segments shining and minutely punctured.

Wings hyaline, golden brown along the costa, pale fuscous at the apex.

Vertex of the head, thorax (especially the hinder parts), and the petiole with a long pile of pale fuscous hair.

Length 16 mm.

♂. Smaller; clypeus whitish yellow, antennæ black.

Length 14 mm.

*Hab.* Khamba Jong, Sikkim (15,000–16,000 ft.); Gyangtse, Tibet (13,000 ft.). Collected by H. J. Walton on the Tibet Expedition, 1903–4; 18 ♀, 2 ♂.

*Eumenes higletti*, sp. n.

♀. Black; clypeus, mark between antennæ at base, a line behind them, pronotum almost reaching to tegulæ, large ovate spot (interrupted in the centre) on mesopleuræ on each side, posterior margin of postscutellum, median segment broadly on each side, apical margin of the petiole on each side, apical margin of second abdominal segment, except medio-dorsally, and two small isolated spots, apical margins of segments 3, 4, 5 (interrupted dorsally and continuous ventrally), yellow. Anterior femora and tibiæ on outside, base of intermediate and posterior tibiæ, yellow. Antennæ beneath, two quadrate spots on scutellum, tegulæ, metapleuræ on each side, petiole medially, apical segment of abdomen, legs (except where yellow), ferruginous. Wings hyaline, tinted with a golden sheen towards costal area, radial cell fuscous. Clypeus broadly ovate, truncate at the apex, rather longer than broad; pronotum angular in front; median segment truncate, produced towards apex on each side to form a V-shaped depression; petiole rather longer than thorax, slender, the apical portion broader, a small tubercle on each side, following segments elongate-ovate. Punctured; vertex and thorax finely and evenly; mesonotum with a short longitudinal carina, not reaching the middle; petiole and abdomen shining anteriorly, petiole very minutely and sparsely punctured.

Vertex of head and median segment with a dense grey pubescence.

Length 17 mm.

*Hab.* Tamsoo, Gold Coast (*G. A. Higlett*); 1 ♀.

*Eumenes nigratarsis*, sp. n.

♂. Black; clypeus, the lower part of the sinus of each

eye, a mark at base of antennæ, pronotum, a small spot on disc of mesonotum on each side, yellow; mandibles, joints 1-6 of antennæ, line behind the eyes, a long mark on mesopleuræ on each side, postscutellum behind, median segment (except a longitudinal mark in centre), petiole (except the base, a small spot on upper surface near apex), second abdominal segment ventrally and laterally, abdominal segments 3-6 on apical margin, the whole ventral surface of abdomen, legs (with the exception of trochanters, tarsi, and posterior femora on the inside), ferruginous.

Wings golden hyaline, slightly fuscous in radial cell and on the apical area. Clypeus broadened from the base, greatest width rather more than half the length, truncate, produced and narrowed towards apex. Petiole long and very slender, as long as thorax, gradually widening towards apex, a small spine on each side. Following segments of abdomen elongate-ovate. Punctured; vertex and thorax evenly and finely, second abdominal segment finely striate. Terminal joints of antennæ gradually increasing in size towards the apex, terminal joint forming a hook.

Length 20 mm.

*Hab.* Port Darwin, N. Queensland (*G. Turner*), 1 ♂; Dec. 1902.

Nearly allied to *E. latreillei*, Sauss., and *E. bicincta*, Sauss., but differing from them in the much slenderer petiole, and in the ferruginous bands on the apical margin of the abdominal segments.

*Eumenes (Pareumenes?) australensis*, sp. n.

♂. Black; clypeus, scape of antennæ beneath, sinus of the eyes, a line behind the eyes on each side, large quadrangular mark between antennæ at base extending back along the vertex, pronotum reaching back to tegulæ, a large ovate spot on mesopleuræ on each side, a minute spot on the tegulæ, two large median quadrate spots and a small spot on each anterior angle of scutellum, a large elongate yellow mark on median segment on each side, an irregular broken line on apex of petiole above, apical margin above and a conspicuous mark at the base of second abdominal segment on each side, third and fourth abdominal segments dorsally, yellow. Anterior and intermediate femora and tibiæ yellow. Flagellum of antennæ and tarsi ferruginous. Wings hyaline, with a pale golden effulgence, rather more conspicuous along the costal area; second abscissa of radial cell very short, about  $\frac{1}{5}$  as long as the third. Clypeus broadly ovate, truncate at the base,

deeply emarginate at the apex, median segment truncate, divided longitudinally by a narrow furrow; scutellum flat. Petiole of abdomen as long as thorax, very slender at base, gradually widening towards the apex; second abdominal segment about twice as broad as petiole at apex. Punctured slightly on vertex of head; the whole insect shining, sparsely covered with testaceous pubescence.

Length 10 mm.

*Hab.* Cairns, N. Queensland, April 1902 (*R. E. Turner*); 3 ♂.

All the specimens were captured on one flowering bush at Kuranda, about 14 miles from Cairns, at an elevation of 1100 feet.

Intermediate between *Eumenes* and *Pareumenes* as defined by Saussure, *Et. fam. Vesp. Suppl.* p. 133. It resembles *Pareumenes* in the form of the petiole, but the tubercles are only indicated by minute swellings on each side. This is the first described Australian species with any tendency towards *Pareumenes*.

#### PAREUMENES, SAUSS.

##### *Pareumenes marshalli*, sp. n.

♀. Black-pruinose; mandibles, clypeus, sinus of eyes, cheeks, vertex, pronotum, mesopleuræ in front, tegulæ, hinder part of scutellum and of postscutellum, sides of median segment and the surface of the truncation partially, petiole at base and ventro-laterally, basal half of second abdominal segment, segments 4, 5, 6 of abdomen, dark ferruginous brown.

Antennæ, legs, dark ferruginous brown.

Four narrow longitudinal lines on petiole, two on the ventral surface, two on the dorso-lateral surface, and narrow band on apex of petiole, a mark on hind femora outside, yellow.

Wings hyaline, tinged with fuscous on the fore wing towards apex; costal area flavo-hyaline.

Head, thorax, abdomen, and legs covered with short dense whitish pubescence, long and conspicuous on the surface of the truncation of the median segment.

Clypeus rather longer than broad, narrowly produced towards apex, terminated in two small teeth, intervening area transverse. Mandibles deeply toothed. Thorax robust; pronotum in front as wide as head, widening towards tegulæ; scutellum flat, traversed by a slight longitudinal keel, median



segment oblique, with sharply defined lateral margins, apical angles spined. Petiole robust, widening gradually towards apex; a tubercle on each side near the base; a furrow running longitudinally on the dorsal surface towards apex; second abdominal segment pyriform, following segments normal.

The whole smooth, impunctate, except for a few shallow punctures on apical margin of abdominal segments 2 and 3.

Length 16 mm.

*Hab.* Salisbury, Mashonaland, Sept. 1900 (*G. A. K. Marshall*); 1 ♀.

Dedicated to the donor.

This insect appears to be the first *Pareumenes* described from Africa, the other species being principally Indian.

*Eumenes imperatrix*, Smith, described from Northern China, and *E. pictifrons*, Smith, from Celebes, should also be placed in the genus.

#### KATAMENES, gen. nov.

Head as in typical *Eumenes*; mandibles long, not dentate, sharply pointed. Antennæ massive, hooked at apex. Maxillary palpi 6-jointed; joints 1, 2, 3 long, subequal; joint 4 half as long as third joint, joints 5 and 6 very short, together as long as fourth, joints 5 and 6 articulated to joint 4 below the apex. Labial palpi 4-jointed. Petiole as long as thorax and median segment, slender at base, apical half swollen, constricted at apex. Claws of tarsi simple. One spur, very obscure and rudimentary, on intermediate tibiæ, situated on the inner side. 1 ♂.

In general superficial appearance strongly resembles *Eumenes*, but has a peculiar look owing to the heavy, thickly built antennæ, which seem large in proportion to the insect, and to the long, somewhat abruptly broadened robust petiole. The articulation of the two terminal joints of the maxillary palpi to the fourth joint below the apex seems to be analogous to the terminal joints in the labial palpi of some genera of bees, such as *Megachile*, &c.

#### *Katamenes watsoni*, sp. n.

♂. Black; clypeus, mandibles, except the extreme apical points, scape beneath, a narrow line behind each eye, the cheeks, pronotum in front, broadening laterally, scutellum in front, the postscutellum, two marks on mesopleuræ on each side, apical margin of petiole, and an apical band on segments 2-6 of abdomen, both dorsally and ventrally,

anterior and intermediate tarsi and tibiæ, yellow. Apex of mandibles, a mark on the clypeus, flagellum, except the terminal 5 segments, tegulæ, sides of median segment, petiole, except base, and a median dorsal mark shaped like a reversed T, a broad band round the centre of second abdominal segment, anterior and intermediate femora, a mark on anterior and intermediate tibiæ on the outside, posterior legs totally, ferrugineous. Wings clear hyaline, slightly fulvous along costa. Clypeus rather longer than broad, truncate at base and apex, broadest in centre, narrowly produced towards apex; pronotum slightly narrowed anteriorly, obtuse-angled at sides; median segment truncate, slightly arched, the apical angles forming a V-shaped hollow; petiole about as long as thorax, very slender at base, rather abruptly increasing medially, slightly constricted towards the apex, second abdominal segment elongate-ovate.

Head, thorax, and petiole covered with distinct, even, punctures; clypeus and remaining segments of abdomen impunctate. Covered with a greyish-white pubescence; long on cheeks, vertex, and median segment; short and dense on abdomen and clypeus.

Length 16 mm.

*Hab.* Peshawur (*E. Y. Watson*); 1 ♂.

#### MONTENZUMIA, Sauss.

##### *Montezumia pulchella*.

*Gayella pulchella*, Sm. Journ. Proc. Linn. Soc., Zool. ii. 1857, p. 108.

Smith's species, described from Borneo, is certainly not a *Gayella*. The only two known species of *Gayella* are both from Chile.

##### *Montezumia burmanica*.

*Montezumia burmanica*, Bingham, Hym. Brit. India, vol. i. (1897).

*Montezumia bisulcata*, Cameron, Ann. Mag. Nat. Hist. (7) vol. vi. p. 535 (1900).

Cameron's species from Khasia is indistinguishable from *M. burmanica*, which ranges through to China.

Cameron says "allied to *M. burmanica*, Bingham," but gives no points of difference.

##### *Montezumia wallacei*, sp. n.

♀. Black; a small spot at the base of the mandibles, two minute spots between the antennæ, the scape faintly beneath,

two conspicuous marks on median segment, yellow. Head and thorax bluish black, abdomen jet-black. Wings suffused with a dark purple effulgence. Tibiæ and tarsi covered with a short, thick, golden pubescence, almost yellow in some lights. Clypeus subtriangular truncate; mesonotum with two short and conspicuous longitudinal furrows, median segment with a deep medial longitudinal groove widening at the apex, the apex on each side produced to form a small emargination with conspicuous teeth on each side, sides of median segment forming ridges. Petiole of abdomen flat dorsally, a small tubercle on each side beneath. Punctured; head, pronotum, mesonotum in front, and part of petiole rather coarsely granular, rest of thorax and abdomen (except petiole) minutely and sparsely punctured, petiole coarsely striate on dorsal surface.

Length 22 mm.

*Hab.* Sumatra (*A. R. Wallace*); 1 ♀.

Seems to be rather nearly allied to *M. orientalis*, Grib., from Pulo Laut, but differs in having the head coarsely granular and in many respects in colour-pattern. The two curious emarginations on the apex of the median segment are quite peculiar to the species.

#### NORTONIA, SAUSS.

##### *Nortonia gilberti*, Turner.

*Euchalcomenes gilberti*, Turner, Trans. Ent. Soc. 1908, p. 90.

The mouth-parts are those of a normal *Nortonia*, a fact noticed by Turner after his description was in the press.

*Pachymenes viridis*, Smith, Journ. Proc. Linn. Soc. Lond., Zool. vol. iii. p. 163, from Key Island, and *P. elegantula*, D. T., Cat. Hym. vol. ix. p. 23, from Batchian, stated by Turner as belonging to the genus *Euchalcomenes* consequently come into *Nortonia*.

Thus the genus *Euchalcomenes*, Turner, sinks as a synonym of *Nortonia*.

##### *Nortonia elegans*, Smith.

*Eumenes elegantula*, D. T. Genera Insectorum, fasc. 19, Hymenoptera, Vespidae, p. 22.

*Pachymenes elegans*, Smith, Journ. Proc. Linn. Soc. Lond., Zool. Suppl. p. 131 (1860).

##### *Nortonia viridis*, Smith.

*Pachymenes viridis*, Smith, Journ. Proc. Linn. Soc. Lond. vol. iii. p. 163 (Aru).

*Nortonia rechbergi*.

*Nortonia viridis*, Schulthess-Rechberg, Ver. zool.-bot. Ges. Wien, vol. liii. p. 362 (1903), New Guinea.

The species from New Guinea described by Schulthess-Rechberg under this name consequently sinks to the older species described by Smith in 1859. I propose that it should be renamed *Nortonia rechbergi*, in honour of the author.

## ABISPA, Mitchell.

*Abispa australis*, Smith, Cat. Hym. Brit. Mus. vol. v. p. 42.

The type is here stated to be a female, but the type-label is under a male. The sexual difference in the clypeus is marked; the two teeth on that of the male are sharp and distinctly prominent, whereas in the female they are blunt and hardly perceptible.

*Abispa paragioides*, sp. n.

♂. Reddish orange; mesonotum posteriorly, second abdominal segment (except apical margin), black. Mesonotum dark ferrugineous anteriorly. Wings flavo-hyaline, fuscous at the apex, darkest in radial cell. Clypeus rather longer than broad, narrowly produced towards apex, which is emarginate; scutellum with an inconspicuous longitudinal furrow, postscutellum divided from it by a considerable fissure, a blunt tubercle at each end; median segment truncate and medially depressed, the apical angle on each side produced to form a spine. Abdomen elongate-ovate, first abdominal segment rather narrower than the second; with a shallow longitudinal furrow. Punctured; head and thorax finely, median segment coarsely, and abdomen minutely.

Length 18 mm.

*Hab.* Port Darwin, Northern Territory, Australia (*Gilbert Turner*); 2 ♂.

Distinguished from *A. australis*, Sm., from Port Essington, which has 3-tuberculate postscutellum, and the base of the first abdominal segment black; from *A. ephippium*, which also has the postscutellum 3-tuberculate and the clypeus more broadly emarginate; and from *A. splendida* in the form of the clypeus and general distribution of colour.

The resemblance between the insects of this genus and *Paragia walkeri* has been mentioned under the description of that species, but between no two species is the likeness

more remarkable than between *P. walkeri* and *A. parajoides*, which certainly occur together, as Port Darwin is not more than 40 miles distant from Adelaide River.

### RHYNCHIUM, Spinola.

*Rhynchium hæmorrhoidale*, Fabr., race *salomonis*, subsp. n.

♀. Black; antennæ, mandibles, spot behind each orbit, a small mark above insertion of antennæ. tibiæ and tarsi, ferruginous. Wings flavo-hyaline. Clypeus subtriangular, narrowly truncate; pronotum rather slender anteriorly, widening towards the tegulæ; scutellum and postscutellum slightly arched, the latter overhanging the median segment, which is truncate, rounded laterally, and depressed medially. Abdomen with the first segment rather narrower than the second, about as broad as median segment. Head and thorax uniformly coarsely punctured, abdomen more finely, median segment with a series of small tubercles on each side, mesonotum with a short longitudinal carina running to the posterior margin.

Length 20 mm.

*Hab.* Solomon Islands (*C. M. Woodford*); 1 ♀.

This race most closely resembles specimens of *R. hæmorrhoidale* from Celebes and Ceram, but differs from them considerably in the amount of puncturation on the mesonotum and scutellum, and in the absence of any fuscous on the wings. The insect has a slender appearance when compared with typical *R. hæmorrhoidale*.

### *Rhynchium abispoides*, sp. n.

♀. Reddish ferruginous; two minute spots on the base of each mandible, a small spot behind the insertion of each antenna, mesonotum, tegulæ on the inside, median segment on hind surface, first abdominal segment at base, second abdominal segment, black. Wings flavo-hyaline, more golden towards costa, apical area fuscous. Tibiæ and tarsi covered with a short dense golden pile. Clypeus ovate, produced towards the apex and narrowly emarginate; pronotum square anteriorly, rather narrower than thorax at the tegulæ; scutellum and postscutellum separated by a conspicuous transverse furrow; median segment truncate and depressed medially, sides produced to form blunt angles. Clypeus longitudinally striate towards apex, a carina broadly V-shaped on vertex behind ocelli; thorax and abdomen finely and evenly punctured, two shallow longitudinal sulci on mesonotum, median segment transversely striate.

Length 14 mm.

*Hab.* Queensland (*F. P. Dodd*); Mackay, Queensland (*R. E. Turner*); Clare, S. Australia (*W. Wesché*).

Unlike any other described species of the genus from Australia, strongly resembles *Abispa paragioides* in general colour. The specimens from S. Australia differ from the Queensland individuals in having the vertex and mesopleuræ black. Some specimens from Swan River, W. Australia, resemble the South Australian form.

♂. Unknown.

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VI.—Notes on Crustacea found in the Gizzard of a Deep-sea Cephalopod. By THOMAS SCOTT, LL.D., F.L.S.

[Plates II. & III.]

DR. W. E. HOYLE, the well-known authority on the Cephalopoda, when examining one of these organisms captured in deep water in the South Atlantic, discovered in its gizzard a number of fragments and one or two moderately whole specimens of small crustaceans, on which apparently the creature had been feeding some time before it was captured. The crustacean remains comprised several species, and included representatives of the Isopoda, the Amphipoda, and the Copepoda. Very few of them, however, were sufficiently perfect for identification, and one of these is a rather interesting species belonging to the Copepoda.

I am indebted to the Rev. T. R. R. Stebbing for the privilege of overhauling this somewhat curious collection, and also to my son Mr. Andrew Scott for the drawings which illustrate this paper and for assistance otherwise.

I have on several occasions found interesting Crustacea, not only minute Copepods, but tolerably big crabs, such as *Hyas*, *Pagurus*, *Geryon triden*, and full-grown Norway lobsters, in the stomachs of fishes, and in one case no fewer than fifty-four pairs of cuttlefish jaws were obtained in the stomach of a king-fish, *Lampris luna*\*, but I think this is the first time I have had the opportunity of examining a carcinological collection obtained in the stomach of a Cephalopod.

The Cephalopod referred to—*Stauroteuthis hippocrepium*, Hoyle †, was captured at a depth of 2425 fathoms in lat.

\* See Twenty-first Report Fishery Board for Scotland, pt. iii. p. 219 (with a photograph of the jaws).

† See Bull. Mus. Comp. Zool. vol. xlii. no. 1, pp. 1-77 (with 12 plates).